Mrs. Lisa A. Harris
LaPorte Cremation Service
P.O. Box 321
LaPorte, IN 46352

Dear Mrs. Harris:

Re: Exempt Construction and Operation Status,
091-11918-00121

The application from LaPorte Cremation Service, received on February 22, 2000, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following crematory incinerator for human remains, to be located at 1877 West Severs Road, LaPorte, Indiana is classified as exempt from air pollution permit requirements:

(a) One (1) crematory incinerator for human remains, maximum capacity of 100 pounds per hour, supplemented by natural gas Fuel at a rate of 1.7 million British Thermal units(MMBTU) per hour.

The following conditions shall be applicable:

(1) Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuos opacity monitor in a six (6) hour period.

(2) Pursuant to 326 IAC 4-2-2(incinerators) shall meet the following:

(a) consist of primary and secondary chambers or the equivalent;

(b) be equipped with a primary burner unless burning wood products;

(c) comply with 326 IAC 5-1 and 326 IAC IAC 2;

(d) be maintained properly as specified by the manufacturer and approved by the commissioner;

(e) comply with other state and/or local rules or ordinances regarding installation and operation of incinerators;

(f) be operated so that emissions of hazardous material including, but limited to, viable pathogenic bacteria, dangerous chemicals or gases, or noxious odors are prevented;

(g) not emit particulate matter in excess of

:

(1) all other incinerators; five-tenths (0.5) pounds of particulate matter per one thousand (1,000) pounds of dry exhaust gas at standard conditions corrected to fifty (50)percent excess air;

(h) not create a nuisance or a fire hazard.

If any of the above result, the burning shall be terminated immediately.

This exemption is the first air approval issued to this source.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Management (OAM) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

Spahi

cc: File - LaPorte County
LaPorte County Health Department
Northwest Regional Office
Air Compliance - Rick Reynolds
Compliance Data Section - Karen Nowak
Administrative and Development - Janet Mobley
Technical Support and Modeling - Michele Boner

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for an ***Exemption***

Source Background and Description

Source Name: ***LaPorte Cremation Service***
Source Location: ***1877 W Severs Road, LaPorte, Indiana 46352***
County: ***LaPorte***
SIC Code: ***7261***
Operation Permit No.: **091-11918-00121**
Permit Reviewer: ***Spahi***

The Office of Air Management (OAM) has reviewed an application from LaPorte Cremation Service relating to the construction and operation of a crematory incinerator for human remains.

Permitted Emission Units and Pollution Control Equipment

The source consists of the following permitted emission units and pollution control devices:

(a) One (1) crematory incinerator for human remains, maximum capacity of 100 pounds per hour, supplemented by natural gas fuel at a rate of 1.7 million British Thermal units(MMBTU) per hour.

Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted facilities operating at this source during this review process.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
# 1	Incinerator	17	1.7	2200	1200

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on September 16, 1999.

Emission Calculations

See Appendix A of this document for detailed emissions calculations of natural gas incinerator. (2 pages.)

See Appendix B of this document for detailed emissions calculations of incineration of human remains from the natural gas incinerator(3 pages.)

Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency."

Pollutant	Potential To Emit (tons/year)
PM	0.36
PM-10	0.36
SO_2	0.57
VOC	0.0014
CO	0.631
NO_x	0.96

(a) The potential to emit (as defined in 326 IAC 2-1.1-3) of NO_X is less than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-1.1-3) of CO is less than twenty-five(25) tons per year. Therefore , the source is subject to the provisions of 326 IAC 2-5.1-1.

County Attainment Status

The source is located in LaPorte County.

Pollutant	Status
PM-10	Attainment
SO_2	Maintenance Attainment
NO_2	Attainment
Ozone	Attainment
CO	Attainment
Lead	Attainment

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule

applicability relating to the ozone standards. LaPorte County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) LaPorte County has been classified as attainment or unclassifiable for CO. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

New Source PSD Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	0.36
PM10	0.36
SO_2	0.57
VOC	0.0014
CO	0.631
NO_x	0.96
Single HAP	0.0
Combination HAPs	0.0

(a) This new source is not a major stationary source because no attainment pollutant is emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

(a) each criteria pollutant is less than 100 tons per year,
(b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
(c) any combination of HAPs is less than 25 tons/year.

This is the first air approval issued to this source.

Federal Rule Applicability

(a) (i) This incinerator is not subject to the requirements of the New Source Performance Standard, 326 IAC 12, (40 CFR 60.50, Subpart (E)) because this incinerator has a charge capacity of 1.5 tons per day, which is less than 50 tons per day, for this rule to applicable.

(ii) This incinerator is not subject to the requirements of New Source Performance Standards, 326 IAC 12, (40 CFR 60.50c - 60.58c, Subpart (E)) - Standards of Performance for Hospital/Medical/Infectious Waste Incinerators for which construction is commenced after June 20, 1996 because the definition of hospital waste and medical/infectious waste does not include "human corpses, remains, and anatomical parts that are intended for interment or cremation."

(b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR part 63) applicable to this source.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is located in LaPorte County, which is not one of the listed counties for this rule. Additionally, the source does not have the potential to emit CO, VOC, NO_X, PM-10, SO_2 at greater than 100 tons per year rate. Therefore, 326 IAC 2-6 does not apply.

326 IAC 5-1 (Visible Emissions Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability - Individual Facilities

326 IAC 4-2-2 (Incinerators)

Pursuant to 326 IAC 4-2-2, the particulate matter emissions shall be limited to 0.5 pounds per 1,000 pounds of dry exhaust gas at standard conditions corrected to fifty percent(50%) excess air.

This incinerator complies with this rule.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 188 hazardous air pollutants (HAPs) set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

None of the listed air toxics will be emitted from this source.

Conclusion

The construction and operation of this incinerator shall be subject to the conditions of the attached proposed Exemption 091-11918-00121.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Incinerator # 1

Company Name: **LaPorte Cremation Service**
Address City IN Zip: **1877 W Severs Rd, LaPorte, Indiana 46352**
CP: **091-11918**
Plt ID: **091-00121**
Reviewer: Spahi
Date: 02-29-2000

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
1.7	14.9

Pollutant

	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.0	0.1	0.0	0.7	0.0	0.6

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).
See page 2 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Incinerator # 1
HAPs Emissions

Company Name: **LaPorte Cremation Service**
Address City IN Zip: **1877 W Severs Rd, LaPorte, Indiana 46352**
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Reviewer: Spahi
Date: 02-29-2000

HAPs - Organics

	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	1.564E-05	8.935E-06	5.585E-04	1.340E-02	2.532E-05

HAPs - Metals

	Lead	Cadmium	Chromium	Manganese	Nickel
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03
Potential Emission in tons/yr	3.723E-06	8.191E-06	1.042E-05	2.829E-06	1.564E-05

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Southern Environmental Sciences, Inc. conducted emissions testing of the Industrial Equipment & Engineering Company's Power-Pak II. Model IE43-PPII crematory incinerator on May 18, 1994. The unit was located at 13011 U.S. Highway 19, Hudson, Florida. The testing was conducted for p-articulates, carbon monoxide and visible emissions. Oxygen(O_2) concentrations were measured in order to correct results to 7 % O_2.

Emission factors are based on a test for a larger unit of similar design- the Ener-Tek cremator.

Nitrogen Oxide(NO_2)

emission rate for Ener-Tek based on test results:

(30.1 ppmv x 640 dscfm x 60 min/hr x 0.0283 m^3/ft^3 x 1.88 mg/m^3/ppmv)/(453,600 mg/lb)

= 0.14 lb/hr x 8760 hr/yr x 1 ton/2000 lb

= 0.61 ton/yr

Ener -Tek burn rate is 250 lb/hr; Power-Pak II burn rate is 100 lb/hr

estimated emission rate for Power- Pak II is:

(100 lb/hr/ 250 lb/hr) x 0.14 lb/hr

= 0.06 lb/hr x 8760 hr/yr x 1 ton/2000 lb

= 0.26 ton/yr

estimated concentration for Power-Pak II is:

(0.06 lb/hr x 453,600 mg/lb)/(587 dscfm x 60 min/hr x 0.0283 m^3/ft^3 x 1.88 mg/m^3/ppmv)

= 14 ppmv

Volatile Organic Compounds (VOC)

emission rate for Ener-Tek based on test results:

(0.5 ppmv x 640 dscfm x 60 min/hr x 0.0283 m^3/ft^3 x 1.88 mg/m^3/ppmv)/(453,600 mg/lb)

= 0.0008 lb/hr x 8760 hr/yr x 1 ton/2000 lb

= 0.0035 ton/yr

Ener -Tek burn rate is 250 lb/hr; Power-Pak II burn rate is 100 lb/hr

estimated emission rate for Power- Pak II is:

(100 lb/hr/ 250 lb/hr) x 0.0008 lb/hr

0.00032 lb/hr

= 0.00032 lb/hr x 8760 hr/yr x 1 ton/2000 lb

= 0.0014 ton/yr

estimated concentration for Power-Pak II is:

(0.0008 lb/hr x 453,600 mg/lb)/(587 dscfm x 60 min/hr x 0.0283 m^3/ft^3 x 1.88 mg/m^3/ppmv)

= 0.2 ppmv

Sulfur Dioxides (SO_2)

emission factor from AP-42 Table 2.1-12(2.5 lb/ton) used because of lack of test data.

(100 lb/hr x 2.5 lb/ton) x 1 ton/2000 lb

= 0.13 lb/hr x 8760 hr/yr x 1 ton/2000 lb

= 0.57 ton/yr

estimated concentration for Power-Pak II is:

(0.13 lb/hr x 453,600 mg/lb)/(587 dscfm x 60 min/hr x 0.0283 m^3/ft^3 x 1.88 mg/m^3/ppmv)

= 23 ppmv

Carbon Monoxide (CO)

Carbon monoxide tests were on Power-Pak II crematory.

CO emissions = 0.007 lb/hr
= 0.007 lb/hr x 8760 hr/yr x 1 ton/2000 lb

= 0.031 tons/yr

Compliance with 326 IAC 4-2-2(8)(b)

Flow rate of flue gas = 2150 acfm
Temperature of flue gas = 1180^0 F

Oxygen level in flue gas = 10.6 %
Nitrogen level in flue gas = 82.1 %

EPA method 3 for % excess air:

% Excess air = (% 02 - 0.5%CO) x 100 % / (0.264 N2 - (0.5% O2 - 0.5% CO))\
= (10.6%) x 100% / (0.264 x 82.1 - 10.6)
= 96%

Correction factor for 50% excess air = (100 + % EA)/150
= 1.31

Particulate matter per pound of flue gas
= (0.083 lb/hr)/2150 ft^3/min of flue gas

density of flue gas = P/RT
R = 54.5 ft lbf/lbm ^{0}R

P(density) = (2117 lbf/ft^2)/(54.5 ft lbf/lbm ^{0}R)/(1180 + 460)^0 R)
= 0.024 lbm/ft^3

Particulate matter per pound of gas = (0.083 lb/hr)/(2150 ft^3/min) x ((0.024 lbm/ft^3) x (60 min/hr))
= 2.6 x 10-5 lb PM/lb of flue gas

Particulate matter per 1,000 pounds of flue gas = (2.6 x 10-5 lb PM/lb of flue gas) x 1000 lb of flue gas
x 1.31
= 0.034 lbs < 0.5 lbs

Allowable PM emissions = 0.083 lb/hr x 1 ton/2000 lb x 8760 hr/1 yr x 0.5/0.034
= 5.34 tons/yr